What is claim is:

1. An ice tray driving device of an automatic ice-making machine comprising:

first and second output gears for turning first and second ice trays to perform an ice separating operation, respectively:

a driving gear for rotating the first and second output gears; and

a mesh start section for starting meshing of the first output gear with the driving gear when the driving gear rotates from a reference position in one direction, and for starting meshing of the second output gear with the driving gear when the driving gear rotates from the reference position in the other direction, each of positions of the first and second output gears and the driving gear provided when the first and second ice trays lie in horizontal states being set as each reference position,

wherein the mesh start section includes

a first raised tooth formed by projecting at least one tooth of the first output gear in the tooth width direction,

a second raised tooth formed by projecting at least one tooth of the second output gear in the tooth width direction,

a column section axially adjacent to the driving gear,

a recessed tooth disposed in the column section and formed so as to mesh with the first and second raised teeth, and

a slide member that blocks the recessed tooth in the column section at a predetermined position, and, when the driving gear rotates, rotates together with the column section by a predetermined angle and then slide-contacts with the column section,

wherein the slide member keeps blockage of the recessed tooth with

respect to the second raised tooth when the driving gear rotates the first output gear, and keeps blockage of the recessed tooth with respect to the first raised tooth when the driving gear rotates the second output gear.

2. An ice tray driving device according to claim 1,

wherein the slide member prevents mesh of the second raised tooth with the recessed tooth when the driving gear rotates the first output gear, and prevents mesh of the first raised tooth with the recessed tooth when the driving gear rotates the second output gear.

3. An ice tray driving device according to claim 1, wherein

the first raised tooth is disposed on a cylindrical first circumferential wall axially adjacent to the first output gear,

the second raised tooth is disposed on a cylindrical second circumferential wall axially adjacent to the second output gear,

the mesh start section further includes

a first notch disposed in the first circumferential wall and circumferentially adjacent to the first raised tooth,

a second notch disposed in the second circumferential wall and circumferentially adjacent to the second raised tooth, and

a contact piece that is disposed on the slide member and abuts on and slide-contacts with one of the first and second circumferential walls,

when the driving gear rotates the first output gear, the contact piece travels to the second circumferential wall through the first notch and stops, and

when the driving gear rotates the second output gear, the contact piece travels to the first circumferential wall through the second notch and stops.

4. An ice tray driving device according to claim 1, further comprising:

a case for storing the first output gear, the second output gear, the driving gear, and the mesh start section,

a first abutting section where the case abuts on the first output gear at the reference position, and

a second abutting section where the case abuts on the second output gear at the reference position.

5. An ice tray driving device according to claim 4, wherein

the first abutting section has a first abutting wall disposed in the case and a first abutting raised section disposed on the first output gear, and

the second abutting section has a second abutting wall disposed in the case and a second abutting raised section disposed on the second output gear.

6. An ice tray driving device according to claim 1, further comprising:

a first abutting section for preventing the first output gear from rotating in cooperation with the second output gear when the second output gear rotates, and

a second abutting section for preventing the second output gear from rotating in cooperation with the first output gear when the first output gear rotates.

7. An ice tray driving device according to claim 1, further comprising:

a first ice detector for detecting an amount of ice stored in a first ice storing section for storing ice separated from the first ice tray, and

a second ice detector for detecting an amount of ice stored in a second ice storing section for storing ice separated from the second ice tray.

8. An ice tray driving device according to claim 7, wherein

the first ice detector has

a first cam interlocking with the first output gear, and

a first ice detecting shaft that turns in cooperation with the first cam and is coupled to a first ice detecting lever, the first ice detecting lever moving vertically in response to the amount of ice stored in the first ice storing section, and

the second ice detector has

a second cam interlocking with the second output gear, and

a second ice detecting shaft that turns in cooperation with the second cam and is coupled to a second ice detecting lever, the second ice detecting lever moving vertically in response to the amount of ice stored in the second ice storing section.

9. An ice tray driving device according to claim 1, further comprising first and second ice-tray-position detectors for detecting horizontal positions and ice separation positions of the first and second ice trays, respectively.

10. An ice tray driving device according to claim 9, wherein

the first ice-tray-position detector comprises

a first cam interlocking with the first output gear,

a first switch lever having a projection driven by the first cam and a first contact point, and

a first switch for generating a signal on contacting with the first

contact point, and

the second ice-tray-position detector comprises

a second cam interlocking with the second output gear,

a second switch lever having a projection driven by the second cam and a second contact point, and

a second switch for generating a signal on contacting with the second contact point.

11. An ice tray driving device according to claim 10, further comprising:

a first ice detector having

the first cam, and

a first ice detecting shaft that turns in cooperation with the first cam and is coupled to a first ice detecting lever, the first ice detecting lever moving vertically in response to an amount of ice stored in a first ice storing section for storing ice separated from the first ice tray, and

for detecting the amount of the ice stored in the first ice storing section, and

a second ice detector having

the second cam, and

a second ice detecting shaft that turns in cooperation with the second cam and is coupled to a second ice detecting lever, the second ice detecting lever moving vertically in response to an amount of ice stored in a second ice storing section for storing ice separated from the second ice tray, and

for detecting the amount of the ice stored in the second ice storing section,

wherein

the first ice detecting shaft blocks an operation of the first switch

lever when the ice in the first ice storing section is less than a predetermined amount, and

the second ice detecting shaft blocks an operation of the second switch lever when the ice in the second ice storing section is less than a predetermined amount

12. An ice tray driving device according to claim 1, wherein

the number of teeth of the driving gear is smaller than one of those of the first and second output gears.

13. An ice tray driving device according to claim 1, wherein

the rotating axis of the driving gear, the rotating axis of the first output gear, and the rotating axis of the second output gear are disposed so as to form a triangle.

14. An ice tray driving device according to claim 1, further comprising:

a first transmission gear that is coaxial with the first output gear and has a section that individually rotates in cooperation with the driving gear and a section that rotates together with the first output gear, and

a second transmission gear that is coaxial with the second output gear and has a section that individually rotates in cooperation with the driving gear and a section that rotates together with the second output gear.

15. An automatic ice-making machine comprising:

first and second ice trays;

an ice tray driving device, and

a cooler for cooling contents stored in at least the first and second ice

trays,

the ice tray driving device including:

first and second output gears for turning the first and second ice trays to perform an ice separating operation, respectively;

a driving gear for rotating the first and second output gears; and

a mesh start section for starting meshing of the first output gear with the driving gear when the driving gear rotates from a reference position in one direction, and for starting meshing of the second output gear with the driving gear when the driving gear rotates from the reference position in the other direction, each of positions of the first and second output gears and the driving gear provided when the first and second ice trays lie in horizontal states being set as each reference position,

wherein the mesh start section includes

a first raised tooth formed by projecting at least one tooth of the first output gear in the tooth width direction,

a second raised tooth formed by projecting at least one tooth of the second output gear in the tooth width direction,

a column section axially adjacent to the driving gear,

a recessed tooth disposed in the column section and formed so as to mesh with the first and second raised teeth, and

a slide member that blocks the recessed tooth in the column section at a predetermined position, and, when the driving gear rotates, rotates together with the column section by a predetermined angle and then slide-contacts with the column section,

wherein the slide member keeps the blockage of the recessed tooth with respect to the second raised tooth when the driving gear rotates the first output gear, and keeps the blockage of the recessed tooth with respect to the

first raised tooth when the driving gear rotates the second output gear.